

DIGITAL IMAGES WITH COMPOSITE EXPOSURE

Abstract:

A machine or method used for exposure adjustment in digital imaging. Two or more digital images form a set of digital images of a field of view. At least one pixel in one of the images comprises a digital number representative of a signal level of a sensor response to visible light. Digital images from the set are arithmetically combined to form a composite digital image of the field of view. The composite digital image can have different exposure properties than the component digital images, for instance differing exposure times and differing ranges of variation in the digital numbers representative of features in the field of view. The invention enables adjustment of exposure during arithmetic combination, so that the various features of the field of view in the composite image are neither overexposed nor underexposed unless such characteristics are desired. The invention enables enhancement of streaks or motion blur during combination, and also allows removal of streaks or motion blur. Composite pixels in the composite image can have differing exposure times, and differing combination functions can be used to produce the composite pixels. The invention can be used to produce a single composite image in such applications as digital photography. The invention can be used with flash photography or with passive imaging in ambient light. The invention can also be used to produce a sequence of composite images in such applications as movies, television programs, computer video sequences, and personal video recordings.